Watercress

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Specific Name and Introduction: Watercress (*Nasturtium officinale* R.Br.) has been known in Europe and Asia for thousands of years, and it is now grown in many countries worldwide. It is a member of the Brassicaceae (Cruciferae) family and is used as a leafy salad vegetable. It has attractive dark green leaves, a strong flavor and is rich in vitamins. Watercress is typically grown in running water (Snowden, 1991).

Horticultural Maturity Indices: Leaves should be harvested when full size and are still bright-green.

Quality Characteristics and Criteria: Watercress should be bright-green and not limp. The leaves of watercress quickly become yellow and slimy when improperly handled.

Grades, Sizes and Packaging: There are no U.S. Grade Standards. It is sold in bunches and can be packed in waxed cartons with top ice (Hruschka and Wang, 1979). It is also be packaged in boxes with plastic liners.

Pre-Cooling Conditions: Watercress should be pre-cooled promptly after harvest either by hydro-cooling or vacuum-cooling (Hruschka, and Wang, 1979).

Optimum Storage Conditions: Watercress can be stored for 2 to 3 weeks at 0 °C (32 °F) with > 95% RH (Hruschka, and Wang, 1979). Shelf-life is reduced to 2 to 3 days if stored under low RH.

Controlled Atmosphere (CA) Considerations: The rate of yellowing can be reduced by storing in atmospheres > 7% CO_2 with not less than 5% O_2 (Aharoni et al., 1989).

Retail Outlet Display Considerations: Contact with melting ice and water sprays help in preventing dehydration. Handle carefully to avoid crushing or bruising the delicate leaves.

Chilling Sensitivity: It is not sensitive to low temperature; store as cold as possible without freezing.

Ethylene Production and Sensitivity: Watercress produces only low amounts of ethylene in response to wounding, < 0.1 μL kg^{-1} h^{-1} at 20 °C (68 °F). However, exposure to ethylene reduces shelf-life due to increased rate of yellowing (Philosoph-Hades et al., 1989).

Respiration Rates:

Temperature	mg CO_2 kg^{-1} h^{-1}
0 °C	16 to 28
5 °C	47 to 53
10 °C	95 to 125
15 °C	139 to 210
20 °C	300 to 344
25 °C	334 to 420

To get mL kg^{-1} h^{-1}, divide the mg kg^{-1} h^{-1} rate by 2.0 at 0 °C (32 °F), 1.9 at 10 °C (50 °F), and 1.8 at 20 °C

(68 °F). To calculate heat production, multiply mg kg^{-1} h^{-1} by 220 to get BTU per ton per day or by 61 to get kcal per metric ton per day. Data are from Smith (1957) and Hruschka, and Wang (1979).

Physiological Disorders: Watercress is very susceptible to dehydration and crushing of leaves.

Postharvest Pathology: Harvested watercress is highly perishable. In warm conditions, the stems can become slimy as a result of bacterial soft rot due to *Erwinia carotovora*. It is therefore important that watercress is cooled promptly after harvest (Snowden, 1991).

Quarantine Issues: None known.

Suitability as Fresh-cut Product: It can be used as part of mixed salads.

Special Considerations: Care must be taken to maintain high RH or storage-life is substantially shortened.

References:

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